

Abstract

Operators and plant computer programs used to  
operate a complex process facility are aided in  
managing the process during transitions by a computer-  
based apparatus. The apparatus incorporates a  
knowledge base and methods for identifying modes and  
transitions during plant operation. At frequent  
intervals, measured values of the process variables  
are used to evaluate the current state of the process  
and its sections and subsections. The identified  
state of the plant is broadcast to different clients  
of this application. The apparatus monitors the plant  
for the normal execution of the transition. It also  
identifies the current task being performed in the  
process and sends this message to different sections  
of the plant. The results are displayed on a visual  
display device and can also be sent to other plant  
computer programs for guidance during the transition.  
A permanent chronological record of the sequence of  
events - modes and transitions - of the plant and  
sections and subsections including the pertinent plant

conditions and information is also generated by the apparatus for subsequent review and analysis. Methods for generating the knowledge base are also presented.

1. The first step in the process is to collect data from the various sources available. This data is then processed and analyzed to determine the most relevant information. The results of this analysis are then used to generate a knowledge base. This knowledge base is then used to generate a model of the system being studied. The model is then used to simulate the system and generate predictions. The predictions are then compared to the actual data to determine the accuracy of the model. The model is then refined and the process is repeated until the model is sufficiently accurate.